4.1 RISK ASSESSMENT

Hazard identification is the process used to identify all possible situations in the hospital where people (patient, staff, visitors etc.) may be exposed to injury, infections or disease.

The risk hazards may be of two types:

1. **Natural disasters**
    - ♦ Earthquake
    - ♦ Cyclone / Storm
    - ♦ Flood / Draught

2. **Technological disasters**
    - ♦ Gas leakages, Rupture of Gas cylinders / Pressurized Vessels / Pipe lines
    - ♦ Chemical, Biological, Radiological, Nuclear & Explosion Emergencies
    - ♦ Failure of Machines / Production
    - ♦ Human Error / Nuisance / Maniac
    - ♦ Terrorist Act
    - ♦ Fire Emergencies

The objectives of risk assessment are:

- To achieve a level of preparedness to safeguard the public and mitigate the impact of the disaster.
- To prompt an effective disaster management strategy without causing panic among the patients, visitors and the public.

4.2 DISASTER MANAGEMENT PLAN

Hospital Disaster Management provides the opportunity to plan, prepare and when needed enables a rational response in case of disasters/ mass casualty incidents (MCI). Disasters and mass casualties can cause great confusion and inefficiency in the hospitals. They can overwhelm the hospitals resources, staffs, space and or supplies. Lack of any tangible plan to fall back upon in times of disaster leads to a situation where there are many sources of command, many leaders, and no concerted effort to solve the problem.

A disaster planning shall be done in a way that the quality of care to the serious/ critical patients is not compromised. The plan should aim at the survival and recuperation of as many patients as possible.

An internal risk management authority is formed which may undertake periodic evaluation of safety precautions to be followed by each department for hazard recognition with the following steps:

1. Both Clinical and Non-clinical audits will be undertaken on a periodical basis to identify the measures taken to prevent/reduce the impact of the potential hazards.
2. All the staff of the hospital will be encouraged to routinely assess all activities to identify potential hazards.
3. Departmental Heads and Managers will identify hazards within their specific area of control. The same should be notified to the appropriate hospital authorities for immediate corrective actions.

To make the proceedings easier, the hospital administrators will embark upon disaster planning using a phase plan. The hospital emergency planning is divided into three phases:

1) **Pre-disaster phase**

(a) Planning: Risk assessment and planning for preparedness will be done, the hospital plans will be formulated and then discussed in a suitable forum for approval.

(b) The disaster manual: The hospital disaster plan shall be written down in a document form and copies of the same should be available in all the areas of the hospital.

(c) Staff education and training: Regular staff training by suitable drills shall be undertaken in this phase.

2) **Disaster Phase**

(a) Phase of activation: Alter and notification of emergency.

(b) Activation of the chain of command in the hospital.

(c) Operational phase: This is the phase in which the actual tackling of mass casualties will be performed according to the disaster/emergency plan.

(d) Phase of deactivation: When the administration/ command of the hospital will be satisfied that the influx of mass casualty victims is not continuing to overwhelm the hospital facilities.

3) **Post Disaster Phase**

This is an important phase of disaster planning where the activities of the disaster/ emergency phase will be discussed and the inadequacies will be noted for future improvements.

4.3 SAFETY MEASURES:

Fire Safety

All the arrangements shall be made as per National Building Code Part-IV: 2005

FIRE safety is so important to all hospital administrators, employees and designers that the leadership in the hospital field should make every effort to keep abreast of current developments in the fire safety field.

The basic principles of fire safety shall be kept in mind during the design, construction, operation and maintenance of each hospital facility. Planning for fire safety can be divided into five steps:

- Minimizing the chance of fire,
- Early discovery,
- Restricting fire spread,
- Extinguishing the fire, and
- Evacuating the building.

Fire Prevention:

To prevent the incidence of fire, appropriate measure to control fire hazards in the building and maintenance of the building facilities has been practiced. The preventive measures taken for fire safety are as follows:

- The hospital has been declared 'No Smoking' zone.
- Fire Detection & Alarm Systems are to be installed in different parts of the hospital, in-case of the fire, on detecting fire the devices are activated and hooter is alarmed in the security office.
- Fire Extinguisher: As per IS- 2190 Fire extinguishers, in appropriate sizes and types, are to be provided throughout the hospital in every floor of the hospital. The maintenance, Testing & inspection of Extinguishers as per schedule to be carried out by a qualified person. The theft of or tampering with an extinguisher should be reported immediately to the Maintenance concerned In-charge.
- Emergency Exits shall be provided at places and no obstructions may be placed in front of or upon any exit door.

Class of Fire	**Description**	**Suitable Type of Appliances**
A	Fire in ordinary combustibles (wood, fibres, rubber plastics, paper and the like)	Gas Expelled Water Type
B	Fires in flammable liquids, paints, grease, solvents.	Fire extinguishers of CO_2, Foam type, Dry powder type and buckets.
C	Fire in gaseous substances under pressure including liquefied gases	Fire extinguishers of carbon dioxide and dry powder type

Electrical / Electronics Installations	IT & Server Rooms, Electrical Panels And equipment.	Dry Chemical Powder, CO_2 and FM -200 or Clean agent type

Electrical Safety:

The following measures are required to be undertaken to ensure Electrical safety:

1. Routine Inspection of the power outlets throughout the hospital by the electrician.
2. Trip Switches are to be installed in different parts of the hospital to prevent short circuits.
3. Periodic inspection of wires to ensures that they are in appropriate conditions.
4. Before any electrical appliance is brought into Hospital, a safety inspection is necessary.
5. Electrical equipment not required during night is to be switched off.
6. Areas around electrical switchboards must be kept clear for a distance of at least 1 meter.
7. ABC type fire extinguisher is to be installed adjacent to electrical switchboards.

Bomb Threat:

Bomb threats are delivered in a variety of ways with the majority of threats being called in to the target. In the event of a bomb threat, all personnel will follow the following procedures:

i. The staff member receiving the call should make reasonable efforts to gain as much information as possible. Keep the caller on the line as long as possible. Ask who is calling, and have the caller repeat the message. Write down every word spoken by the person making the call.

ii. If the caller does not indicate the location of the bomb or the time of the possible detonation, the person receiving the call should ask the caller to provide this information.

iii. Pay close attention to any strange or peculiar background noises such as motors running, background music, or other noises that might give some clue concerning the origin of the call.

iv. Immediately call the local Police Department regarding the threat & the caller.

v. Evacuation notification procedures will be activated to evacuate the buildings.

vi. The staff should direct and assist patients to exit the buildings consistent with fire evacuation procedures

vii. The police and assigned staff (security Personal) will conduct an extensive search of the building and remove the bomb with the help of Bomb Disposal Squad.

viii. The Director or authorized representative will approve re-entry into the building after the search is completed and after consultation with the police for bomb removal confirmation.

MOCK DRILL

a) Evacuation drills shall be conducted at established intervals not exceeding 12 months, at the start of each new season, and with new staff. Drills shall be recorded in the operational log.

b) When the evacuation plan involves use of emergency services, they should be involved in the preparation of the plan and should be accorded every opportunity to undertake training or drills at least once per year for continuously operating installations and prior to each opening for seasonal operations.

HOSPITAL SAFETY COMMITTEE:

The Hospital Safety Committee is a multidisciplinary committee consisting of five members. It meets at least six times in a year to evaluate the various safety aspects of the hospital. The Committee undertakes detail analysis of the ongoing monitoring activities and gives its feedback on the same. The Committee submits its report to the Chief Medical Superintendent of the hospital.

The Hospital Safety Committee evaluates the ongoing monitoring activities on various aspects of the following problems:

- Injuries to patients/ visitors
- Property damage.
- Occupational illnesses and injuries to staff
- Hazardous materials and waste spills, exposures, and other related incidents
- Security incidents involving patients, staff, students and visitors at Hospital.
- Fire-safety management problems, deficiencies, and failures.
- Medical equipment-management problems, failures, and user errors
- Utility systems management problems, failures, or user errors.
- Staff Unavailability (such as Weather Emergencies, natural disasters)
- Mass Casualty Patient Influx (such as Infectious Disease Outbreaks).

Role of the Hospital Safety Committee:

a. Provide guidance and direction in all phases of the Safety Management Program.
b. Pro-active safety risk assessments of the clinical and clinical support areas of hospital.
c. Facilitates the Environmental Monitoring Rounds.
d. Advising management of unsafe conditions or of non-compliance with regulations and standards.
e. Conducts on-going safety education classes.
f. Responsible for proposing/revising safety policies.

GENERAL OUTLINE OF EMERGENCY PLANNING

- **On site Emergency Plan**

Role of Security I/C and Shift I's/C

Emergency Control room with Emergency telephone numbers

Fire Wardens for each complex

Medical Aid / Hospital Available, Distance

Rehearsal / Training / SOP

- **Off - site Emergency Plan**

Local Fire Brigade at Distance

Disaster Management / Specialized Teams

Dog Squad / Explosion Detective Teams

Hospital, Number of Doctors and Staff, Distance Availability round o' clock Resources Available

District / Police Authorities

Rehearsal / Training / SOP

ROLES, DUTIES & RESPONSIBILITIES AT THE TIME OF EMERGENCY

The emergency services provided are integrated with other departments of the hospital.

Administrative Incharges, O.T- They will arrange operation theatres & adequate staff and supervise the smooth movement of patients in & out of OTs. They will act as an overall coordinator between medical & paramedical staff & ensure the functionality of the OT & take care of the condition of their patients.

Duty Administrator- Coordinates with store incharges & ensure the availability of all the desirable items. Allot the priorities to the casualties. Interact with CSO & police to maintain calm in the hospital & instruct the staff to control any unwanted crowd. Keep the interaction for mortuary & ice requirement.

Nursing Superintendent- Makes immediate arrangements for nursing staff in OTs, Casualty & wherever needed and supervise the cwill be delivered by them. Check for availability of medicine.

HOD, Department of Anesthesia- Arranges adequate no. of anesthesist. Organize OT teams by name comprising of anesthetist, OT technicians, Nursing staff, bearers, safai karamchari and allot their duties. Instruct & ensure that any bullets, arms, missile recovered from the patient & hand over ultimately to the police after due signatures from the operating surgeon. Keep chief coordinator informed on hourly basis.

Pharmacy & Central store- take immediate actions to replenish all the items used in various wards/ areas. Regularly contact the local suppliers for emergency supply if needed. They keep a sufficient inventory of vital & essential items as a part of preparedness.

HOD, Imaging Services/ laboratories- check for availability of material like chemicals, films, etc. look after the maintenance of the equipments & machines like X-ray machine. Prepare CT/ MRI and immediate investigation as per the needs.

HOD Blood transfusion- ensures adequate availability of all elements of blood. Liase with OT & casuality for blood demand. Arrange staff for blood grouping & cross matching in Causality/ OT.

Chief Engineer- ensures availability of all maintenance staff (electrician, plumber, masson, pump operator, carpenter, etc.) throught the emergency period. Ensures uninterrupted supply of water, power & gases.

Chief security officer- controls sudden rush or traffic. Keep a watch that no unwanted elements are present in the treating area. Instructs his staff to assist casuality staff in unloading & transporting patients. Direct the visitors to control room. Coordinate with police & help them in carrying out their duties.

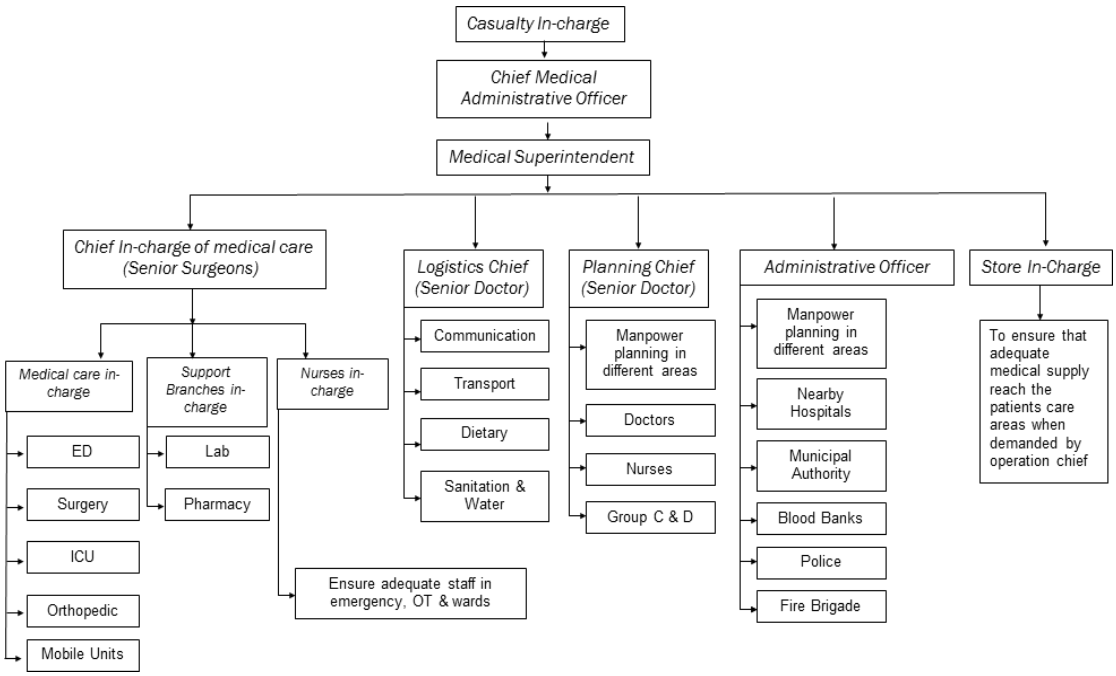
EXTERNAL AGENCIES ENGAGED

External agencies engaged for risk assessment as well as risk management are:

- **Government agencies** (for eg. Hospitals, Fire, Police, civil administration, Bomb disposal squad)
- **Non-Government Organizations**,
- **Private Hospitals**,
- **International relief agencies etc.**

CHAIN OF COMMAND

A chain of command to be followed at the time of Emergency is as follows:



SAFETY INSPECTION AND RECORDS:

The Safety Management Officer or Committee may require periodic assessment of the following inventory:

a. Environmental (lighting, dusts, gases, sprays, noises).
b. Hazardous materials (flammable and caustic).
c. Equipment (biomedical equipment etc.).
d. Power equipment (boilers, motors, etc.).
e. Electrical equipment (switches, breakers, fuses, outlets, connections).
f. Hand tools.
g. Personal protective equipment (safety glasses, ventilators, radiation safety aprons etc).
h. Personal service/first aid supplies (Medical Check Up).
i. Fire protection equipment (alarms and extinguishers).
j. Walkways/roadways (sidewalks, roadways).
k. Transportation equipment (Ambulances, lifts).
l. Containers (hazardous waste bags).
m. Structural openings (windows, doors, stairways).
n. Buildings/structures (floors, roofs, planter walls, fences).
o. Miscellaneous (any items not covered above).